MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

EME4316 – ADDITIVE MANUFACTURING

(ME/RE)

17 OCTOBER 2019
9.00 am - 11.00 am
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 2 pages including cover page with 4 Questions only.
2. Answer **ALL FOUR** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Question 1

(a) Compare and contrast additive manufacturing processes and CNC manufacturing processes in terms of following process characteristics

i) Dimensional accuracy **[4 marks]**
ii) Materials **[4 marks]**
iii)Model complexity **[4 marks]**
iv)Post processing **[4 marks]**
v) Manufacturing workflow **[4 marks]**

(b) State the benefits of 3D printing with regard to customization and sustainability. **[5 marks]**

Question 2

(a) Describe Additive Manufacturing process classification by Pham. **[10 marks]**

(b) What is Hybrid Manufacturing? Explain five reasons to use hybrid additive systems in low volume, high variability projects. **[15 marks]**

Question 3

(a) Discuss about laser scan based build phenomena and errors. How different types of WEAVE scan patterns are facilitated to overcome the said effects in photopolymerization in additive manufacturing processes. **[15 marks]**

(b) Discuss the laser scan mechanism used for microfabrication applications. **[10 marks]**

Question 4

(a) Exhibit the four important additive manufacturing unique capabilities with examples. **[20 marks]**

(b) Explain how Implicit modelling will be useful for design an improved computer aided design tool for additive manufacturing. **[5 marks]**

End of paper